

**Notice of Allowability**

Application No.

10/717,313

Examiner

EMEM EKONG

Applicant(s)

FELTER, STEFAN

Art Unit

2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the patent application filed on November 20, 2003.
2. ☒ The allowed claim(s) is/are 2-10, 12-19, 28-33, and 35-42.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

### **DETAILED ACTION**

1. This Action is in response to applicant's amendment filed on February 22, 2007.

Claims 1-31 are still pending in the present application.

### ***Allowable Subject Matter***

2. Claims 2-10, 12-19, 28-33, and 35-42 are allowed and they were renumbered 1-31.

3. The following is an examiner's statement of reasons for allowance:

Consider claims 12, and 35, the best prior art found during the examination of the present application, Jitsukawa (U. S. Publication No. 2003/0012267 A1) et al., fails to disclose wherein in locating the values the correlator considers a dimensional reception vector formed from the antenna signal matrix with respect to a sampling window time index, the dimensional receptivity vector having a frequency related to a difference between phase components of complex values of the dimensional receptivity vector, there being plural possible frequencies for the dimensional receptivity, the plural possible frequencies being represented by a frequency index; and wherein for each combination of plural possible frequencies and plural time indexes, the correlator is arranged to calculate:  $Y(n,t) = \text{FFT}(n,X(:,t))$  wherein  $t$  is the sampling window time index;  $X(:,t)$  is the complex antenna matrix, with: representing all antenna indexes for one sampling window time index;  $n$  is the frequency index.

Jitsukawa discloses a wireless communication receiver comprising: an antenna structure which acquires dimensionally differentiated signals (see figures 1-3, pars. 6, 30, and 38); a joint searcher (pars. 47, searcher) and channel estimator (par. 10) which essentially concurrently considers the dimensionally differentiated plural signals provided by the plural antennas for determining both a time of arrival and channel coefficient (see figures 2, 4, and pars. 32-71).

However, Jitsukawa et al. fails to disclose an antenna signal matrix in which complex values indicative of the dimensionally differentiated signal received in a sampling window are stored as a function of a sampling window time index and a dimensional differentiation index; a correlator and a parametric estimator which locates value(s) in the antenna signal matrix for use in determining the time of arrival and the channel coefficient; an analyzer which uses the value(s) located by the correlator to generate the time of arrival and the channel coefficient.

Dent (U. S. Patent No. 5,790,606) discloses an antenna signal matrix in which complex values indicative of the dimensionally differentiated signal received in a sampling window are stored as a function of a sampling window time index and a dimensional differentiation index; a correlator and a parametric estimator which locates value(s) in the antenna signal matrix for use in determining the time of arrival and the channel coefficient; an analyzer which uses the value(s) located by the correlator to generate the time of arrival and the channel coefficient (see figures 1 and 7, and col. 4 line 1-col. 6 line 17).

However, Dent does not disclose wherein in locating the values the correlator considers a dimensional reception vector formed from the antenna signal matrix with respect to a sampling window time index, the dimensional receptivity vector having a frequency related to a difference between phase components of complex values of the dimensional receptivity vector, there being plural possible frequencies for the dimensional receptivity, the plural possible frequencies being represented by a frequency index; and wherein for each combination of plural possible frequencies and plural time indexes, the correlator is arranged to calculate:  $Y(n,t) = \text{FFT}(n,X(:,t))$  wherein  $t$  is the sampling window time index;  $X(:,t)$  is the complex antenna matrix, with  $:$  representing all antenna indexes for one sampling window time index;  $n$  is the frequency index, and no suggestion or motivation of the correlator performing the calculate as claimed in the present application is provided by Dent, therefore, this limitation, in conjunction with the other limitations recited in claims 12 and 35 is novel and unobvious in view of Jitsukawa et al., and further in view of Dent, and prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to EMEM EKONG whose telephone number is 571 272 8129. The examiner can normally be reached on 8-5 Mon-Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on 571 272 7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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02/23/2007



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